

Alcatel OmniSolutions User's guide



Hubs and switches for Small and Medium Enterprise

 [Office 108/116 hubs](#)

 [Office 208 switch](#)

 [Office 216 switch](#)



 [Office 224 switch](#)

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Product Description

These hubs are designed to allow easy migration and integration between 10Mbps Ethernet and 100Mbps Fast Ethernet, while providing flexibility in cable connections.

They can operate with either IEEE 802.3 10BASE-T connections, or IEEE 802.3u 100BASE-TX connections. All of the twisted-pair ports support Auto-Negotiation (NWay), allowing the hubs to automatically detect the speed of a network connection.

These devices operate as a Class II Fast Ethernet repeater, allowing them to be linked to another Class II Fast Ethernet hub in the same collision domain.

They contain a built-in switch, allowing them transparent bridging between the 10 Mbps and 100 Mbps segments.

Product Features

Complies with IEEE 802.3 10BASE-T Ethernet and 802.3u 100BASE-TX Fast Ethernet class II repeater standards.

Ethernet connections support Category 3 or better twisted-pair cables.

Fast Ethernet connections support both shielded twisted pair and Category 5 unshielded twisted-pair cables.

Eight NWay RJ-45 ports for Alcatel Office 108 hub and sixteen NWay RJ-45 ports for Alcatel Office 116 hub.

Built-in switching function supports bridging between 10Mbps and 100Mbps segments.

LED indicators for power, collisions, link, network activity, operating speed (10 or 100 Mbps), and switch enabling.

Auto-partition protection.

Data collision detection and handling.

Preamble regeneration, signal re-timing.

Uplink port allows easy linking of two Fast Ethernet or four Ethernet hub stacks.

Built-in power supply. Automatic voltage selection (100V to 240V, 50 or 60Hz).

Unpacking

The package should contain the following items:

One dual-speed SOHO hub

One AC power cord

One external universal power adapter (only for Alcatel Office 108 hub)

Four rubber feet

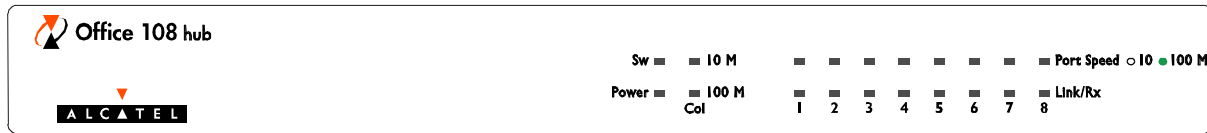
CD Manual

Inspect the hub and all accompanying items. If any item is damaged or missing, report the problem immediately to your networking equipment dealer.

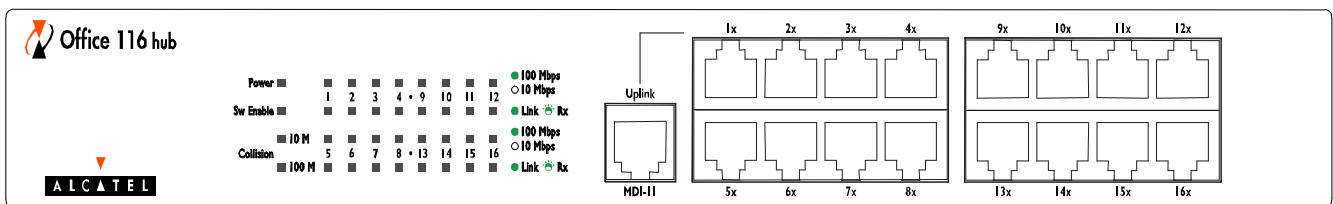
External Components

Front Panel

Alcatel Office 108 hub



Alcatel Office 116 hub



LED Indicator Panel

Refer to the *LED State Indicators* section.

Twisted-Pair Ports*

Use any of these ports to connect stations to the hub. The ports are MDI-X ports, which means you can use ordinary straight-through twisted-pair cable to connect the hub to PCs, workstations, or servers through these ports. To connect to another device with MDI-X ports, such as another hub or an Ethernet switch, use a crossover cable, or connect using the Uplink port.

Uplink Port*

The Uplink port is an MDI port, which means you can connect the hub (or hub stack) to another device with MDI-X ports using an ordinary straight-through cable, making a crossover cable unnecessary.

Port 1 and the Uplink port are really the same port, except that their pinouts are different. **Do not use both Port 1 and the Uplink port at the same time.**

* all ports described are available on the rear panel of Alcatel Office 108 hub.

Installing the Hub

Install the hub in a cool and dry place. See Specifications, for the acceptable temperature and humidity operating ranges.

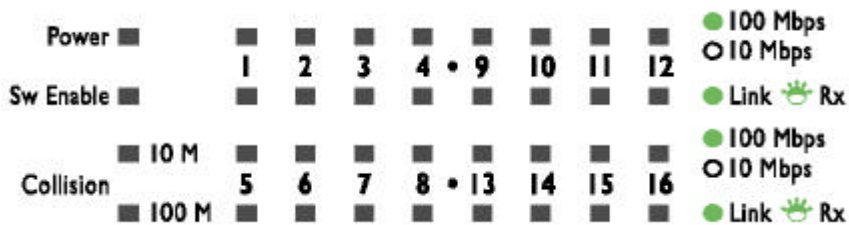
Install the hub in a site free from strong electromagnetic field generators (such as motors), vibration, dust, and direct exposure to sunlight.

Leave at least 10cm of space at the front and rear of the hub for ventilation.

Install the hub on a sturdy, level surface that can support its weight.

When installing the hub on a level surface, attach the rubber feet to the bottom of each device. The rubber feet cushion the hub and protect the hub case from scratches and prevent it from scratching other surfaces.

LED State Indicators



Power Indicator (PWR)

This indicator lights green when the hub is receiving power; otherwise, it is off.

Collision Indicators (Collision 10M/ Collision 100M)

These indicators indicate data collisions on the respective 10Mbps Ethernet or 100Mbps Fast Ethernet segments connected to the hub. (If several hubs are linked together, all of them should detect and indicate the same collision, since collisions span the entire network segment.) Whenever a collision is detected, the respective collision indicator will briefly blink amber.

Link (steady green)

The indicator of a port lights green when the port is connected to a powered Ethernet or Fast Ethernet station. If the station to which the hub is connected is powered off, or if there is a problem with the link, the LED will remain off.

Receive (Rx) (blinking green)

When information is received on a port, its indicator will blink off briefly. Upon reception, the data will be transmitted to all other connected ports.

10/100 Port Speed Indicators

A port's speed indicator should light green when a 100BASE-TX device is connected to the port, and remain dark if the port is unconnected or if a 10BASE-T device is connected.

SW Enable Indicator

This indicator is always lit, showing that the switch function is enabled.

Making Connections

Connectivity Rules

Ethernet (10Mbps) networks need to respect the following connectivity rules:

The maximum length of a twisted-pair cable segment is 100 meters. Cabling should be Category 3 or better.

Between any two end-stations in a collision domain, there may be up to five cable segments and four intermediate repeaters (hubs, hub stacks, or other repeaters).

If there is a path between any two end-stations containing five segments and four repeaters, then at least two of the cable segments must be point-to-point link segments (e.g., 10BASE-T, 10BASE-FL), while the remaining segments may be populated (mixing) segments (e.g., 10BASE-2 or 10BASE-5).

Fast Ethernet (100Mbps) networks need to respect the following connectivity rules:

The maximum length of a twisted-pair segment (that is, the distance between a port in the hub to a single-address network device such as a PC, server, or Ethernet switch) is 100 meters. Cabling and other wiring should be certified as Category 5 or shielded twisted pair.

The maximum diameter in a collision domain is about 205 meters using two Class II hubs (or hub stacks).

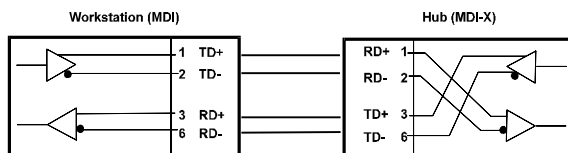
Between any two end-stations in a collision domain, there may be up to three cable segments and two Class II hubs or hub stacks.

Hub to End-Station Connection

After the hub properly installed, it can support up to eight or sixteen end-station connections. Fast Ethernet connection requires either a Category 5 UTP cable or an STP cable. These cables can be up to 100 meters long.

Ethernet connection requires a Category 3 or better UTP cable. It is recommended that you use Category 5 cabling for all connections, in order to make it easier to transition all stations to 100Mbps.

You can connect any combination of PCs, servers, and other single-address network devices to any ports using straight-through twisted-pair cables. These cables should not be crossed over. The following figure illustrates the pin assignments for a straight-through cable:



When connecting a PC or a server, the system being connected should have an Ethernet or Fast Ethernet network interface card with a twisted-pair port.

Hub-to-Hub Uplink

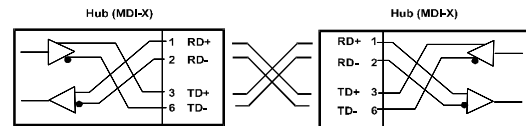
You can link another hub or hub stack using any of the twisted-pair ports or the Uplink port. Linking hubs using ordinary twisted-pair ports requires crossover twisted-pair cables; linking using one ordinary twisted-pair port and the Uplink port requires an ordinary straight-through twisted-pair cable. The Uplink port is shared with Port 1, and you should not use both Port 1 and the Uplink port at the same time.

When connecting two hubs or hub stacks in this fashion, the maximum distance between any two end-stations in a collision domain is 205 meters. If each link between the hub and an end-station is 100 meters, then the hub-to-hub connection is limited to 5 meters. However, if the longest hub-to-end-station connection is less than 100 meters, then the hub-to-hub connection can be up to 100 meters as long as the 205-meter total network diameter rule is followed.

The following table describes different methods of linking hubs (or hub stacks):

HUB PORT USED	DEVICE	PORT TYPE	CABLE TO USE
Normal	Switch Hub or	Non-Uplink	Cross-over (X)
Normal	Switch Hub or	Uplink	Straight-Through (II)
Normal	Server PC) (or		Straight-Through (II)
Uplink	Switch Hub or	Non-Uplink	Straight-Through (II)
Uplink	Switch Hub or	Uplink	Cross-over (X)
Uplink	Server PC) (or		Cross-over (X)

A crossover cable is a straight-through twisted-pair cable in which the wires have been crossed. The figure below shows the pin assignments for an Ethernet or Fast Ethernet crossover cable:



NOTE: The first twisted-pair port (Port 1) is shared with the Uplink port. If you connect a hub to the Uplink port, then do not use Port

Specifications

Standards Compliance:	IEEE 802.3 10BASE-T Ethernet repeater, IEEE 802.3u 100BASE-TX Fast Ethernet repeater (Class II), ANSI X3T9.5 Twisted-Pair Transceiver
Topology:	Star
Protocol:	CSMA/CD
Network Data Transfer Rate:	Ethernet: 10Mbps; Fast Ethernet: 100Mbps
Number of Ports per Hub:	Alcatel Office 108 hub: 8, all dual-speed (10/100Mbps) Alcatel Office 116 hub: 16, all dual-speed (10/100Mbps)
Network Cables:	10BASE-T: 2-pair UTP Cat. 3,4,5 (100m); EIA/TIA-568 100-ohm screened twisted pair (STP) (100m)
LED State Indicators:	Power, 10Mbps collision, 100Mbps collision, Link/ Receive, Speed (10/100Mbps), SW Enable
Power Supply:	100 to 240 VAC, 50 or 60 Hz internal universal power supply
Power Consumption:	Alcatel Office 108 hub: 8 watts max Alcatel Office 116 hub: 24 watts max.
Dimensions:	Alcatel Office 108 hub: 198 mm (W) x 28 mm (H) x 115 mm (D) Alcatel Office 116 hub: 324mm x 231mm x 44.5mm (12.76 x 9.1 x 1.75 inches)
Weight:	Alcatel Office 108 hub: 700 g (with external power adapter) Alcatel Office 116 hub: 2.5 kg
Operating Temperature:	Alcatel Office 108 hub: 0° to 45°C (32°-113°F) Alcatel Office 116 hub: -10° to 55°C (14°-131°F)
Storage Temperature:	-25° to 55°C (13°-131°F)
Humidity:	5%-95% non-condensing
DC Fan:	Alcatel Office 116 hub: 40mm x 40mm x 10mm
EMI:	Alcatel Office 108 hub: FCC Class B, CE Mark Class B, C-tick Alcatel Office 116 hub: FCC Class A, CE Mark Class A, C-Tick
Safety	CE Mark (EN60950) , UL, CSA

Guarantee conditions:

Irrespective of the applicable statutory guarantees, this equipment is guaranteed for a period of two years, from the date of purchase (invoice date), in respect of all parts and repair charges. However, this guarantee shall not be applicable if the equipment has been used in any way contrary the instruction given in this manual, in case of damage due to causes outside the equipment itself, if the equipment installation is/was not compliant with applicable regulations, if the equipment has been modified in any way or if repair work has been carried out by persons not approved by the manufacturer or retailer.

Approval

FCC Warning

Alcatel Office 116 Hub has been tested and found to comply with the regulations for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

CE Mark

The CE marking indicates that these products comply with the European Community directives in effect, and the following directives in particular:

- 89/336/CEE (electromagnetic compatibility)
- 73/23/CEE (low voltage)

WARNING: Alcatel Office 116 Hub is Class A products. In a domestic environment, these products may cause radio interference, in which case the user may be required to take adequate measures.

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Performance Features

♦ **Eight UTP/STP ports. All ports are 10/100 Mbps dual-speed, NWay, Full/Half duplex.**

Uplink (MDI-II port for straight-through connections to another switch, hub or repeater.

Store and forward switching scheme ensures data integrity.

Auto-polarity feature corrects reversed polarity on the transmit and receive twisted-pairs for each port.

100% full wire speed data forwarding for 100 Mbps Fast Ethernet (148,800 pps) and 10 Mbps Ethernet (14,880 pps) on all ports.

Data filtering eliminates all bad packets (CRC Align errors, runts, fragments, etc.) at 100% wire-speed for all ports.

Up to 8k active MAC address entry with self- learning and table aging.

1MB memory with dynamic port buffering reduces lost packets.

Front Panel

The front panel consists of the LED indicators of the switch: Power, 100M, Link/Act and FDX. The LED indicators are used to facilitate monitoring and troubleshooting.

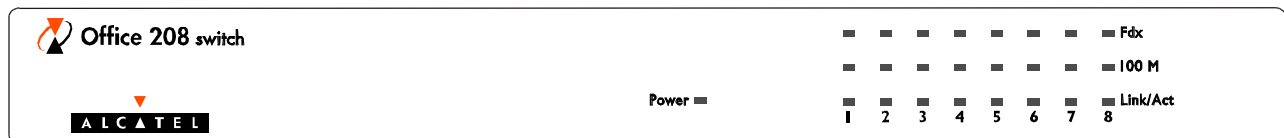


Figure 1 – Front panel view of the Alcatel Office 208 switch

Rear Panel

The rear panel of the Alcatel Office 208 switch consists an DC power connector, 8 (10/100 Mbps MDI-X) ports, and 1 Uplink (MDI-II) port. All ports are 10/100 Mbps dual-speed, NWay enabled Full/Half duplex. Do not use Port 1x and the Uplink port at the same time.

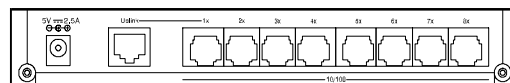


Figure 2 – Rear panel view of the Alcatel Office 208 switch

AC Power Adapter. Supported input voltages for the power adapter range from 90 ~ 230 VAC at 50 ~ 60 Hz. The switch requires 5 VDC / 2.5 Amp.

LED Indicators

The LED indicators of the switch include Power, Speed, Link/Activity and Duplex Mode. The LED indicators are used to facilitate monitoring and troubleshooting of the switch. The following shows the LED indicators for the switch along with an explanation of each indicator.

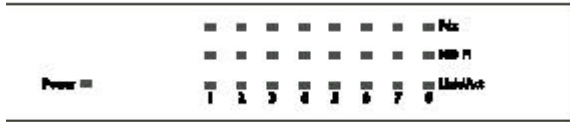


Figure 3 – The Alcatel Office 208 switch LED indicators

Power This indicator operates when the switch has power. If this indicator is not lit, check the DC power connector and wall jack to ensure proper insertion of the power cord.

100M The LED indicator lights **green** when a 100 Mbps device is connected to a respective port or the uplink port. If a 10 Mbps device is connected to a respective port or the uplink port, the LED indicator is OFF.

Link/Act These LED indicators are lighted up **green** when there is a secure connection (or link) to a device at the analogous port. The LED indicators blink **green** whenever there is reception or transmission (activity) of data occurring at a port.

FDX This LED indicator is green when a port is in full duplex (FDX) mode and it is OFF for half duplex (HDX) operations. It blinks when collisions are occurring on the respective port.

Connecting the Switch

Cables

- ♦ The EIA/TIA 568 Wiring standard imposes a 100 meter limit on horizontal runs of twisted-pair cables; in this case, from the switch to any other device.
- ♦ 10 Mbps Ethernet connections must use Category 3 or better twisted-pair cabling fitted with RJ-45 connectors.
- ♦ 100 Mbps Fast Ethernet connections must use shielded twisted pair (STP) or Category 5 or better unshielded twisted-pair (UTP) cables fitted with Category 5 RJ-45 connectors.

We recommend using Category 5 cabling for all connections in order to make it easier to transition all stations to 100 Mbps.

Different connection schemes require different types of cabling. Please use the following chart when choosing cables:

DEVICE	PORT USED	DEVICE BEING CONNECTED	PORT TYPE	CABLE TO USE
Switch	Normal	Hub or Switch	Normal	Crossover (X)
			Uplink	Straight ()
		Server (or PC)		Straight ()
	Uplink	Hub or Switch	Uplink	Crossover (X)
			Normal	Straight ()
		Server (or PC)		Crossover (X)

A crossover cable is a normal straight-through twisted-pair cable in which the wires have been crossed at one end. Please refer to the *Crossover Cables* section of this guide for more detailed information.

Connecting Computers, Hubs, Switches and Other Devices

One or more 10BASE-T, 10/100 dual-speed or 100Base-TX devices (including computers, servers, hubs, switches, bridges, routers, etc.) can be connected to the Alcatel Office 208 switch Dual-speed Switch via a two-pair Category 3, 4, 5 UTP/STP straight twisted-pair cable. In the case of a 10 Mbps Ethernet device, a Category 3, 4 or 5 UTP/STP cable can be used; a 10/100 dual-speed or 100 Mbps Fast Ethernet device requires Category 5 or better UTP/STP.

Any 10BASE-T Ethernet, 10/100 dual-speed or 100BASE-TX Fast Ethernet networking device can be connected to the Alcatel Office 208 switch via the eight twisted-pair ports. The cable connecting the device and the switch cannot exceed 100 meters in length. Devices can be plugged into the switch while the power is on.

The speed (10 or 100 Mbps) and duplex mode (full or half) of the connection will be automatically configured by the built-in NWay feature at the time of the connection. Since all ports on the Alcatel Office 208 switch are dual-speed and capable of full and half duplex operation, the settings chosen by NWay will depend on the capabilities of the device being connected.

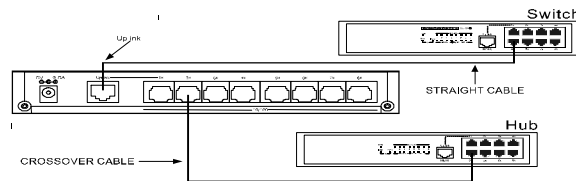


Figure 4 – Alcatel Office 208 switch connected to a hub and a switch

NOTE: The first twisted-pair port (Port 1x) is shared with the Uplink port. If you connect a hub to the Uplink port, then do not use Port 1x (and vice-versa). **Never have devices connected to the Uplink port and Port 1x at the same time.**

Using a straight cable

The connection shown in Figure 5 uses a normal straight-through cable (the same as used to connect a computer) to connect the Uplink port on the Alcatel Office 208 switch to a normal twisted-pair port on the other switch. Alternatively, a straight cable can be used to connect any of the non-Uplink (MDI-X) twisted-pair ports on the Alcatel Office 208 switch to an Uplink (MDI-II) port on the device being connected.

Please note that a straight-through cable is always used when connecting an MDI-X port to an MDI-II port.

Using a crossover cable

The connection shown in Figure 5 uses a crossover cable to connect the (MDI-X) Port 2x on the Alcatel Office 208 switch to a normal twisted-pair (MDI-X) port on the hub. Using a crossover cable is also necessary when connecting an (MDI-II) Uplink port to another (MDI-II) Uplink port or NIC. More detailed information about crossover cables can be found in the *Crossover Cables* section of this guide.

Please note that a crossover cable must be used whenever connecting an MDI-II port to an MDI-II port or when connecting an MDI-X port to an MDI-X port.

Crossover Cables

When connecting the switch to another device such as a switch, bridge, router or hub a crossover cable may be necessary. The following diagrams and tables show the standard RJ-45 receptacle/connector and their pin assignments.

RJ-45 Pin Assignments		
Contact	MDI-X Port	MDI-II Port
1	RD+ (receive)	TD+ (transmit)
2	RD- (receive)	TD- (transmit)
3	TD+ (transmit)	RD+ (receive)
4	Not used	Not used
5	Not used	Not used
6	TD- (transmit)	RD- (receive)
7	Not used	Not used
8	Not used	Not used

The standard RJ-45 pin assignments

With a crossover cable, two pairs of wires are switched at one connector end. Carry out the following steps to create a customized, crossover twisted-pair cable:

1. Leave one end of the cable as is, with the RJ-45 connector intact. The wiring at just one end of the cable needs to be modified.
2. At the other end of the cable, connect wires 1 and 2 to contacts 3 and 6, respectively. Likewise, connect wires 3 and 6 to contacts 1 and 2. Refer to the following diagram:

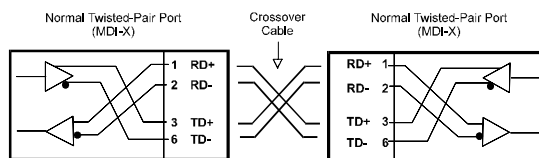


Figure 5 – Crossover cable for use with MDI-X to MDI-X and/or MDI-II to MDI-II

Specifications

General	
Standards:	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet ANSI/IEEE Std 802.3 NWay auto-negotiation
Protocol:	CSMA/CD
Data Transfer Rate: Ethernet:	10 Mbps (half duplex) 20 Mbps (full duplex)
Fast Ethernet:	100Mbps (half duplex) 200Mbps (full duplex)
Topology:	Star
Network Cables:	
10Base-T:	2-pair UTP Category 3,4,5 (100 m) EIA/TIA- 568 100-ohm STP (100m)
100Base-TX:	2-pair UTP Cat. 5 (100 m) EIA/TIA-568 100-ohm STP (100m)
Number of Ports:	8 x 10/100 Mbps MDI-X ports
Media Interface Exchange:	MDI-II RJ-45 shared with port 1x
DC inputs:	5 VDC, 2.5 Amp
Power Adapter:	90 - 230 VAC, 50/60 Hz (external universal power supply)
Power Consumption:	8 watts maximum
Operating Temperature:	32 ° ~ 131 °F (0 ° ~ 55 °C)
Storage Temperature:	13 ° ~ 131 °F (-25 ° ~ 55 °C)
Humidity:	5% ~ 95% non-condensing
Dimensions:	197x115x28 mm (1U)
Weight:	1.5 Kg
EMI:	CE Mark Class B , C-Tick Class B , FCC Class B , VCCI Class B
Safety:	UL (UL 1950), CSA (CSA950), CE Mark (EN60950)

Performance	
Transmission Method:	Store-and-forward
RAM Buffer:	1MB bytes per device
Filtering Address Table:	Up to 8k entries per device
Packet Filtering/Forwarding Rate:	148,800 pps per port (for 100Mbps) 14,880 pps per port (for 10Mbps)
MAC Address Learning:	Automatic update Max age: fixed

Guarantee conditions:

Irrespective of the applicable statutory guarantees, this equipment is guaranteed for a period of two years, from the date of purchase (invoice date), in respect of all parts and repair charges. However, this guarantee shall not be applicable if the equipment has been used in any way contrary the instruction given in this manual, in case of damage due to causes outside the equipment itself, if the equipment installation is/was not compliant with applicable regulations, if the equipment has been modified in any way or if repair work has been carried out by persons not approved by the manufacturer or retailer.

Approval

CE Mark

The CE marking indicates that these products comply with the European Community directives in effect, and the following directives in particular:

- 89/336/CEE (electromagnetic compatibility)
- 73/23/CEE (low voltage)

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About This Guide

Congratulations on your purchase of the 16-port 10/100M NWay Fast Ethernet Switch. This device integrates 100Mbps Fast Ethernet and 10Mbps Ethernet network capabilities in a highly flexible desktop package.

Purpose

This manual discusses how to install your 16-port 10/100M NWay Fast Ethernet Switch.

Terms/Usage

In this guide, the term “Switch” (first letter upper case) refers to your 16-port 10/100M NWay Fast Ethernet Alcatel Office 216 switch, and “switch” (first letter lower case) refers to other Ethernet switches.

Overview of this User's Guide

Chapter 1, *Introduction*. Describes the Switch and its features.

Chapter 2, *Unpacking and Setup*. Helps you get started with the basic installation of the Switch.

Chapter 3, *Identifying External Components*. Describes the front panel, rear panel and LED indicators of the Switch.

Chapter 4, *Connecting the Switch*. Tells how you can connect the Switch to your Ethernet network.

Appendix A, *Technical Specifications*. Lists the technical (general, physical and environmental, and performance) specifications of the Switch.

Appendix B, *RJ-45 Pin Specification*. Describes the RJ-45 receptacle/connector and the straight and crossover cable connector.

Introduction

This chapter describes the features of the Switch and some background information about Ethernet/Fast Ethernet switching technology.

Fast Ethernet Technology

The growing importance of LANs and the increasing complexity of desktop computing applications are fueling the need for high performance networks. A number of high-speed LAN technologies have been proposed to provide greater bandwidth and improve client/server response times. Among them, 100BASE-T (Fast Ethernet) provides a non-disruptive, smooth evolution from the current 10BASE-T technology. The non-disruptive and smooth evolution nature, and the dominating potential market base, virtually guarantee cost effective and high performance Fast Ethernet solutions in the years to come.

100Mbps Fast Ethernet is a new standard specified by the IEEE 802.3 LAN committee. It is an extension of the 10Mbps Ethernet standard with the ability to transmit and receive data at 100Mbps, while maintaining the CSMA/CD Ethernet protocol. Since the 100Mbps Fast Ethernet is compatible with all other 10Mbps Ethernet environments, it provides a straightforward upgrade and takes advantage of the existing investment in hardware, software, and personnel training.

Switching Technology

Another approach to pushing beyond the limits of Ethernet technology is the development of switching technology. A switch bridge Ethernet packets at the MAC address level of the Ethernet protocol transmitting among connected Ethernet or Fast Ethernet LAN segments.

Switching is a cost-effective way of increasing the total network capacity available to users on a local area network. A switch increases capacity and decreases network loading by dividing a local area network into different *segments*, which don't compete with each other for network transmission capacity.

The switch acts as a high-speed selective bridge between the individual segments. The switch, without interfering with any other segments, automatically forwards traffic that needs to go from one segment to another. By doing this the total network capacity is multiplied, while still maintaining the same network cabling and adapter cards.

For Fast Ethernet networks, a switch is an effective way of eliminating problems of chaining hubs beyond the "two-repeater limit." A switch can be used to split parts of the network into different collision domains, making it possible to expand your Fast Ethernet network beyond the 205-meter network diameter limit for 100BASE-TX networks. Switches supporting both traditional 10Mbps Ethernet and 100Mbps Fast Ethernet are also ideal for bridging between the existing 10Mbps networks and the new 100Mbps networks.

Switching LAN technology is a marked improvement over the previous generation of network bridges, which were characterized by higher latencies. Routers have also been used to segment local area networks, but the cost of a router; the setup and maintenance required make routers relatively impractical. Today switches are an ideal solution to most kinds of local area network congestion problems.

Features

The Switch was designed for easy installation and high performance in an environment where traffic on the network and the number of user increase continuously.

The Switch with their small, desktop size were specifically designed for small to middle workgroups. This Switch can be installed where space is limited; moreover, they provide immediate access to a rapidly growing network through a wide range of user-reliable functions.

The Switch is ideal for deployment with multiple high-speed servers for shared bandwidth 10Mbps or 100Mbps workgroups. With the highest bandwidth 200Mbps (100Mbps full-duplex mode), any port can provide workstations with a congestion-free data pipe for simultaneous access to the server.

The Switch is expandable by cascading two or more switches together. As all ports support 200Mbps, the Switch can be cascaded from any port and to any number of switches.

The Switch is a perfect choice for site planning to upgrade to Fast Ethernet in the future. Ethernet workgroups can connect to the Switch now, and change adapters and hubs anytime later without needing to change the Switch or reconfigure the network.

The Switch combine dynamic memory allocation with store-and-forward switching to ensure that the buffer is effectively allocated for each port, while controlling the data flow between the transmit and receive nodes to guarantee against all possible packet loss.

The Switch is an unmanaged 10/100 Fast Ethernet Switch that offers solutions in accelerating small Ethernet workgroup bandwidth. Other key features are:

Uplink/ MDI-II (media dependent interface) port for uplink to another switch, hub or repeater.

Store and forward switching scheme capability. As the result of complete frame checking and error frame filtering, this scheme prevents error packages from transmitting among segments.

NWay Auto-negotiation for any port. This allows for auto-sensing of speed (10/100Mbps) thereby providing you with automatic and flexible solutions in your network connections.

Flow control for any port. This minimizes dropped packets by sending out collision signals when the port's receiving buffer is full. Note that flow control is only available in half duplex mode.

Data forwarding rate per port is at wire-speed for 100Mbps speed.

Data forwarding rate per port is at wire-speed for 10Mbps speed.

Data filtering rate eliminates all error packets, runts, etc., per port at wire-speed for 100Mbps speed.

Data filtering rate eliminates all error packets, runts, etc., per port at wire-speed for 10Mbps speed.

Up to 16K active MAC address entry table with self-learning and table-aging.

1MBytes RAM buffers per device.

Unpacking and Setup

This chapter provides unpacking and setup information for the Switch.

Unpacking

Open the shipping cartons of the Switch and carefully unpacks its contents. The carton should contain the following items:

One 16-port 10/100M NWay Fast Ethernet Switch

One external power adapter

CD Manual

If any item is found missing or damaged, please contact your local reseller for replacement.

Setup

The setup of the Switch can be performed using the following steps:

The surface must support at least 1.5 Kg for the Switch.

The power outlet should be within 1.82 meters (6 feet) of the Switch.

Visually inspect the DC power jack and make sure that it is fully secured to the power adapter.

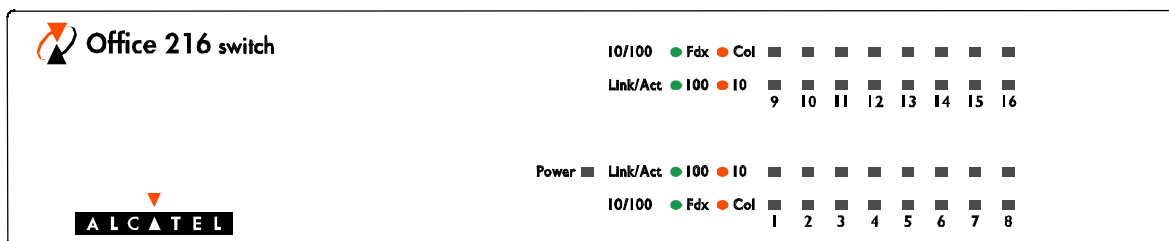
Make sure that there is proper heat dissipation from and adequate ventilation around the Switch. Do not place heavy objects on the Switch.

Identifying External Components

This section identifies all the major external components of the switch. Both the front and rear panels are shown, followed by a description of each panel feature. The indicator panel is described in detail in the next chapter.

Front Panel

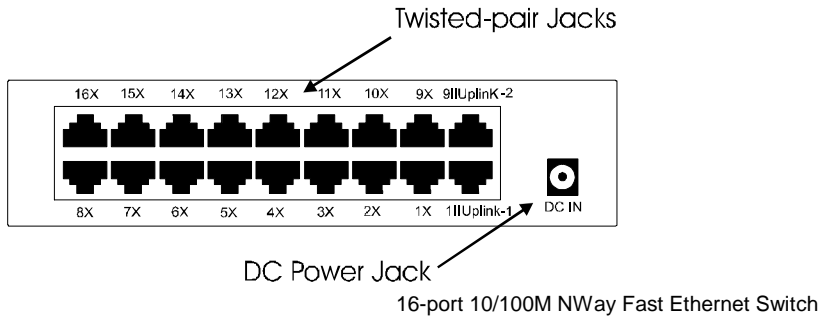
The figure below shows the front panels of the switch. LED Indicator Panel:



16-port 10/100M NWay Fast Ethernet Switch

Refer to the LED Indicator section for detailed information about each of the Switch's LED indicators.

Rear Panel



DC Power Jack: Power is supplied through an external AC power adapter. Check the technical specification section for information about the AC power input voltage.

Since the switch does not include a power switch, plugging its power adapter into a power outlet will immediately power it on.

MDI-X Jacks: Use these jacks to connect stations to the hub. These are **MDI-X** (Medium-Dependent Interface, Cross-wired) jacks, which mean, you can use ordinary straight-through twisted-pair cables to connect user machines and servers to the hub through them. If you need to connect another device with an **MDI-X** jack, such as another hub or an Ethernet switch, you should use a crossover cable, or make the connection using the **MDI-X** jack (described below). For more information about crossover connections.

Uplink Jacks (MDI-II): Use these jacks to connect stations to the hub. This is **MDI-II** (Medium-dependent Interface, straight-wired) jack, which means you can connect the hub to a device with a **MDI-X** port using an ordinary straight-through cable, making a crossover cable unnecessary.

LED Indicators

Power Indicator (PWR)

This indicator lights green when the hub is receiving power, otherwise, it is off.

Full/Half Duplex, 10/100M Collision (FDX10/100(*green*), COL 10/100(*amber*))

This LED indicator light green when a respective port is in full duplex (FDX) mode. Otherwise, it is OFF for half duplex (HDX) operations. It blinking amber when collisions are occurring on the respective port.

100M Link/Activity, 10M Link/Activity (100M LINK/ACT(*green*), 10LINK/ACT(*amber*))

This indicator light green when the port is connected to a 100Mbps Fast Ethernet station, if the indicator blinking green will be transmitting or received data on the 100Mbps network. Otherwise, if the indicator light amber when the port is connected to a 10Mbps Ethernet station, if the indicator blinking amber will be transmitting or received data on the 10Mbps network.

Connecting The Switch

This chapter describes how to connect the Switch to your Fast Ethernet network.

PC to Switch

A PC can be connected to the Switch via a two-pair Category 3, 4, 5 UTP/STP straight cable. The PC (equipped with a RJ-45 10/100Mbps phone jack) should be connected to any of the 16 ports (1x - 16x).

The LED indicators for PC connection dependent on the LAN card capabilities. If LED indicators are not light after making a proper connection, check the PC LAN card, the cable, the Switch conditions and connections.

The following are LED indicator possibilities for a PC to Switch connection:

1. The 100LINK/ACT, 10LINK/ACT LED indicator light green for hookup to 100Mbps speed or light amber for hookup to 10Mbps speed.
 2. The FDX 10/100,COL 10/100 LED indicator depends upon LAN card capabilities for full-duplex or half-duplex.
-

Hub to Switch

A hub (10 or 100BASE-TX) can be connected to the Switch via a two-pair Category 3, 4, 5 UTP/STP straight cable. The connection is accomplished from the hub uplink (MDI-II) port to any of the Switch (MDI-X) ports: 1x - 16x.

10BASE-T Hub

For a 10BASE-T hub, the Switch LED indicators should light up as the following:

FDX 10/100, COL 10/100 LED indicator is *OFF*.

100LINK/ACT, 10LINK/ACT LED indicator is light amber.

100BASE-TX Hub

For a 100BASE-TX hub, the Switch LED indicators should light up as the following:

FDX 10/100,COL 10/100 LED indicator is *OFF*.

100LINK/ACT,10LINK/ACT LED indicator is light green.

Hub without Uplink (MDI-II) port

If a hub is not equipped with an uplink (MDI-II) port, connection can be made using either straight cable or crossover cable.

Using straight cable

When using straight cable, the connection can be made from the uplink (MDI-II) port of the Switch to any port of the Hub.

Using crossover cable

When using crossover cable, the connection can be made from any ports of the Switch to any port of the Hub.

Switch to Switch (other devices)

The Switch can be connected to another switch or other devices (routers, bridges, etc.) via a two-pair Category 3, 4, 5 UTP/STP straight or crossover cable.

Using straight cable

When using straight cable, this is done from the uplink (MDI-II) port of the Switch (Switch A) to any of the 10Mbps or 100Mbps (MDI-X) port of the other switch (switch B) or other devices.

Using crossover cable

When using crossover cable, this is done from any (MDI-X) port of the Switch (Switch A) to any of the 10Mbps, 100Mbps (MDI-X) port of the other switch (switch B) or other devices.

1. The 100LINK/ACT, 10LINK/ACT LED indicator light green for hookup to 100Mbps speed or light amber for hookup to 10Mbps speed.
2. The FDX 10/100, COL 10/100 LED indicator depends upon LAN card capabilities for full-duplex or half-duplex

Port Speed & Duplex Mode

After plugging the selected cable to a specific port, the system uses auto-negotiation to determine the transmission mode for any new twisted-pair connection:

If the attached device does not support auto-negotiation or has auto-negotiation disabled, an auto-sensing process is initiated to select the speed and set the duplex mode to half-duplex.

Technical Specifications

General	
Standards	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100 Base-TX Fast Ethernet ANSI/IEEE Std 802.3 NWay auto-negotiation
Protocol	CSMA/CD
Data Transfer Rate	Ethernet: 10Mbps (half duplex) 20Mbps (full duplex) Fast Ethernet: 100Mbps (half duplex) 200Mbps (full duplex)
Topology	Star
Network Cables	10BASE-T: 2-pair UTP Cat. 3,4,5 (100 m), EIA/TIA- 568 100-ohm STP (100 m) 100BASE-TX: 2-pair UTP Cat. 5 (100 m), EIA/TIA-568 100-ohm STP (100 m)
Number of Ports	16 x 10/100Mbps ports
Uplink Port	MDI-II RJ-45 x 2

Physical and Environmental	
DC inputs	DC5V/5A
Power Consumption	25 watts. (max.)
Temperature	Operating: -10° ~ 50° C, Storage: -10° ~ 70° C
Humidity	Operating: 10% ~ 90%, Storage: 5% ~ 90%
Dimensions	184 x 124 x 44 mm (W x H x D)
EMI:	FCC Class B, CE Mark B, VCCI-II
Safety:	UL (1950) , CE Mark (EN60950)
Performance	
Transmission Method:	Store-and-forward
RAM Buffer:	1Mbytes per device
Filtering Address Table:	Up to 16K entries per device
Packet Filtering/Forwarding Rate:	10Mbps Ethernet: 14,880/pps 100Mbps Fast Ethernet: 148,800/pps
MAC Address Learning:	Automatic update

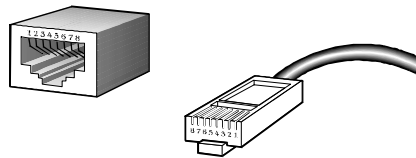
RJ-45 Pin Specification

When connecting your 16-port 10/100M NWay Fast Ethernet Switch to another switch, a bridge or a hub, a modified crossover cable is necessary. Please review these products for matching cable pin assignment.

The following diagram and tables show the standard RJ-45 receptacle/connector and their pin assignments for the switch-to-network adapter card connection, and the straight / crossover cable for the Switch-to-switch/hub/bridge connection.

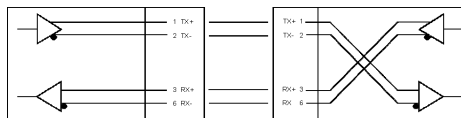
RJ-45 Connector pin assignment	
Contact	Media Direct Interface Signal
1	TX + (transmit)
2	TX - (transmit)
3	Rx + (receive)
4	Not used
5	Not used
6	Rx - (receive)
7	Not used
8	Not used

The standard cable, RJ-45 pin assignment

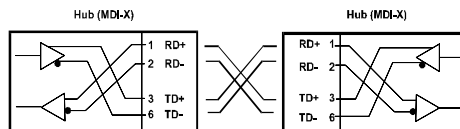


The standard RJ-45 receptacle/connector

The following shows straight cable and crossover cable connection:



Straight cable for Switch (uplink MDI-II port) to switch/Hub or other devices connection



Crossover cable for Switch (MDI-X port) to switch/hub or other network devices (MDI-X port) connection

Guarantee conditions

Irrespective of the applicable statutory guarantees, this equipment is guaranteed for a period of two years, from the date of purchase (invoice date), in respect of all parts and repair charges. However, this guarantee shall not be applicable if the equipment has been used in any way contrary the instruction given in this manual, in case of damage due to causes outside the equipment itself, if the equipment installation is/was not compliant with applicable regulations, if the equipment has been modified in any way or if repair work has been carried out by persons not approved by the manufacturer or retailer.

Approval

CE Mark

The CE marking indicates that these products comply with the European Community directives in effect, and the following directives in particular:

- 89/336/CEE (electromagnetic compatibility)
- 73/23/CEE (low voltage)

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About This Guide

This section defines the scope of this guide and gives a summary of the contents of each chapter. It describes the features of the Alcatel Office 224 switch 10/100 Auto Negotiation. Henceforth this manual will refer to the Alcatel Office 224 switch 10/100 Auto Negotiation as the Alcatel Office 224 switch. Information about the Alcatel Office 224 switch and other Alcatel products is available on our web site.

Audience

This user guide is intended for the networking or computer technician who is installing the Alcatel Office 224 switch on a network. Refer to other sources for information about networking in general.

All the information you need to install the Alcatel Office 224 switch is contained in this user guide.

Organization

Chapter 1, *Introduction*, gives a physical and functional overview of the Alcatel Office 224 switch. Features, LED panel and management settings are covered.

Chapter 2, *Installing the Alcatel Office 224 switch*, covers installing and powering on the Alcatel Office 224 switch.

Chapter 3, *Connecting the Alcatel Office 224 switch to the Network*, covers network connections, cable specifications and maximum cable length.

Chapter 4, *LEDs*, covers reading and interpreting the LED panel.

Chapter 5, *Managing the Alcatel Office 224 switch*, covers the menus and configurations available.

Chapter 6, *Troubleshooting*, covers troubleshooting the Alcatel Office 224 switch.

Appendix A, *Alcatel Office 224 switch Technical Specifications*, covers the technical specifications of the Alcatel Office 224 switch.

Introduction

This chapter gives a physical and functional overview of the Alcatel Office 224 switch. The Alcatel Office 224 switch is an unmanaged switch, designed for use on small and medium sized networks that require the ability to switch between 10 Mbps and 100 Mbps. The Alcatel Office 224 switch can be used in conjunction with other switches and hubs.

The chapter is divided into several sections. Each section describes the features of the Alcatel Office 224 switch. Many of the topics covered will be dealt with in more detail later in the manual.

The topics covered are:

- Summary of Features
- Explanation of Front and Rear Panels
- Management

Features

The Alcatel Office 224 switch has the following features:

24 NWAY 10/100-TX Fast Ethernet Ports.

All ports support both Full Duplex and Half Duplex operation and are configurable with polarity detection and correcting.

Wire speed packet filtering and forwarding.

Per port LED to indicate link, activity, speed and operation modes.

Configuration data held in EEPROM, controlled by an embedded micro-controller.

Integrated address management, including Layer-2 address resolution, self learning

Supports up to 8K unicast addresses.

Low-power design operating at 3.3V.

RS-232 console port allows user to configure switch ports.

All ports support store and forward.

Packet forwarding rate at 148,810 packets per second in 100 Mbps

Front Panel

The Alcatel Office 224 switch is designed for management at a glance. The LEDs on the front panel of the Alcatel Office 224 switch allow you to monitor performance at a glance. It is not necessary to connect to the Alcatel Office 224 switch in order to check performance or verify that a port is working.

There are 24 ports located on the front. Each of the ports can be used for network connection. The MDI-II Uplink port and port 1 are connected. You cannot use both ports simultaneously.

The MDI-II port is used to connect to switches and hubs that do not have uplink ports.

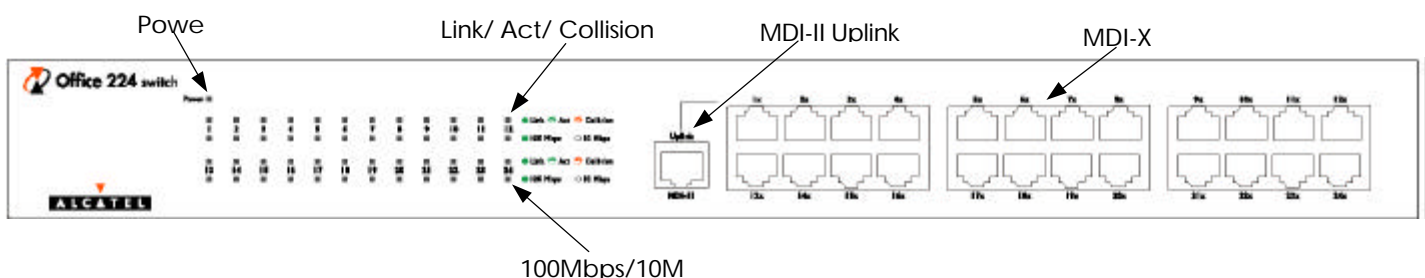


Figure 1: Alcatel Office 224 switch Front Panel

Side Panel

There are two fans. The fans come on when the Alcatel Office 224 switch is powered on. The three holes on each side of the Alcatel Office 224 switch are used to attach the mounting brackets.

There are heat vents located on the side opposite the fans. The fans and the heat vents help to cool the Alcatel Office 224 switch. Always leave five centimeters of space around the Alcatel Office 224 switch for air circulation.

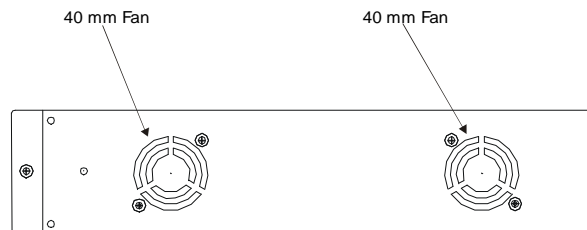


Figure 2: Side Panel

Rear Panel

The three pronged power plug, female RS-232 Console port and rear fan are located at the rear of the Alcatel Office 224 switch, shown in Figure 3. During installation, leave enough room to allow you to plug in the power cable and attach the RS-232 cable for Local Console Management.

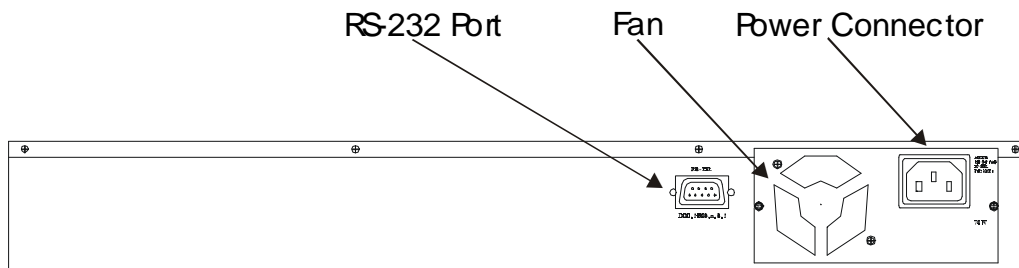


Figure 3: Rear View

Management

The Alcatel Office 224 switch is an unmanaged switch. The only management options are setting port speed and duplex mode, and enabling and disabling flow control. The only way of changing the default settings is through a physical connection with an RS-232 cable.

The Alcatel Office 224 switch does not have an IP address. It can not be monitored using SNMP and RMON.

Installing the Alcatel Office 224 switch

This chapter covers the following:

Unpacking the Alcatel Office 224 switch

Installation options and instructions

Powering on the Alcatel Office 224 switch

Unpacking the Alcatel Office 224 switch

Open the box and carefully unpack the Alcatel Office 224 switch. You should have all the items on the following checklist:

Alcatel Office 224 switch 10/100 Auto Negotiation Switch

RS-232 DCE serial cable

Two mounting brackets and six screws

Four rubber pads with adhesive backing

One 1.82 m (6 foot) power cord

CD Manual

If any items are missing, contact the retailer where you purchased the Alcatel Office 224 switch for assistance.

Installation Options

There are two options for installing the Alcatel Office 224 switch: desktop/shelf installation or rack installation. The procedures for each are explained in the following sections.

The following tools and materials may be necessary to install the Alcatel Office 224 switch:

- Screwdriver to install the brackets as needed.
- Wire cutters to cut cable as needed for network connections.
- Crimpers to crimp cable as needed.
- RJ-45 connectors as needed.

Desktop/Shelf Installation

The dimensions of the Alcatel Office 224 switch are: 441 mm (17.44 inches) x 235 mm (9.25 inches) 63 mm (2.44 inches). The measurements include the 8 mm (.31 inch) rubber feet.

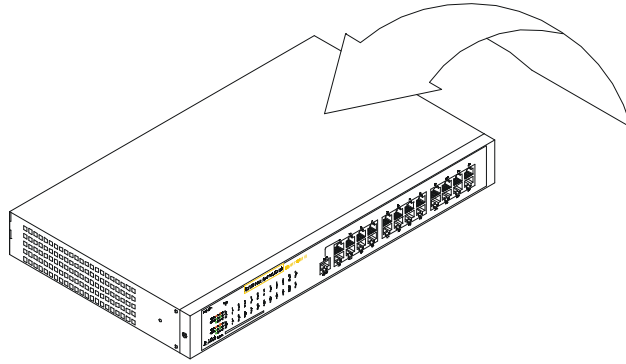
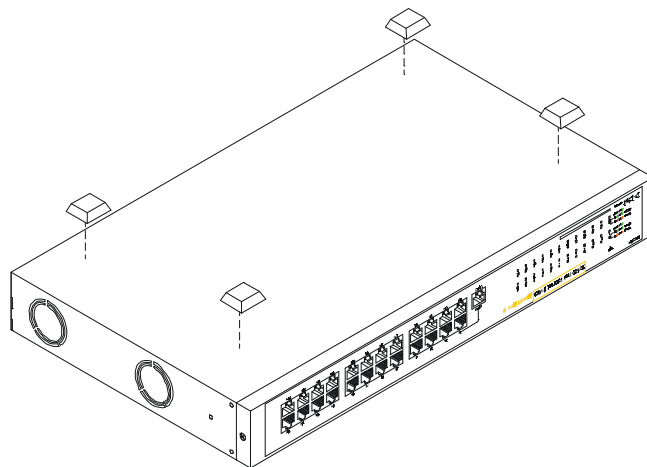
Follow these guidelines for desktop/shelf installation or rack installation:

- The surface must support 3 kg (6.6 lbs).
- The power source must be within 1.82 m (6 feet).
- Power cord and cables should never be stretched.
- Leave at least 5 cm (two inches) around the Alcatel Office 224 switch for ventilation.

Follow these steps to install the Alcatel Office 224 switch on a desktop or shelf:

Place the four rubber feet at the corners of the Alcatel Office 224 switch, see

1. Figure 4.
 2. Place the Alcatel Office 224 switch on the desktop/shelf, see Figure 5: Attach Feet.
-

Figure 4: Install Feet on Bottom**Figure 5: Attach Feet**

Rack Installation

The Alcatel Office 224 switch can be mounted in an EIA standard size 19 inch rack. The dimensions are: 441 mm (17.44 inches) x 235 mm (10.03 inches) x 55 mm (2.16 inches), 1.25 U. Alcatel Office 224 switch can be placed in a wiring closet along with other equipment.

Follow these steps to install the Alcatel Office 224 switch on a rack:

1. Attach a mounting bracket to each side of the Alcatel Office 224 switch with the screws provided, see Figure 6.
2. Slide the Alcatel Office 224 switch into the rack and use the screws provided to secure the Alcatel Office 224 switch to the rack, see Figure 7: Insert into Rack.
3. Connect the power cord and verify that the Alcatel Office 224 switch is receiving adequate power.

Figure 6: Attach Mounting Brackets

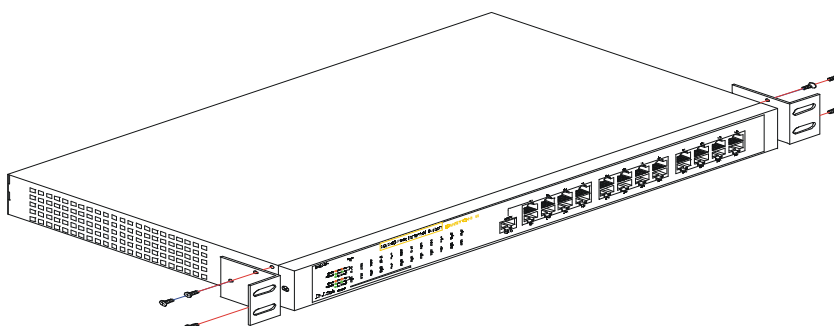
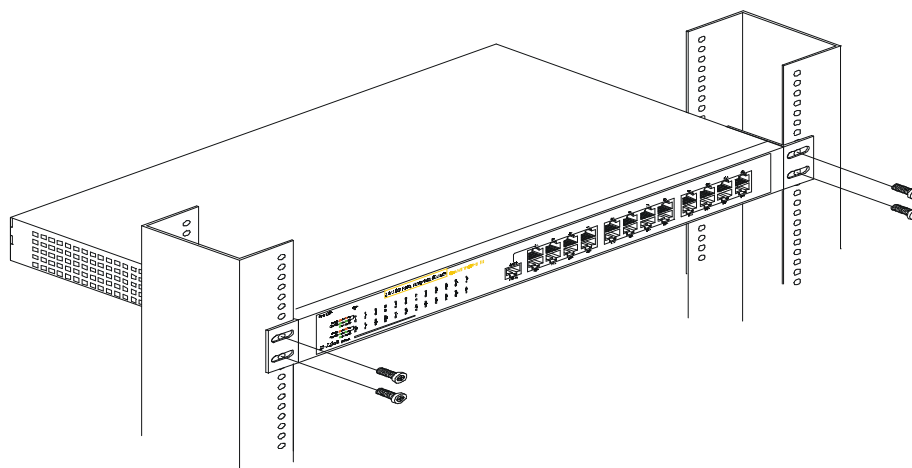


Figure 7: Insert into Rack



Power On

The power supply will adjust to the local power source automatically. The Alcatel Office 224 switch may be plugged in without having any or with all LAN segment cables connected.

The power plug is located at the rear of the Alcatel Office 224 switch. Plug the cable into the wall socket and plug the other end into the Alcatel Office 224 switch. There is no on/off switch. The Alcatel Office 224 switch powers on when you plug the power cord into the three pronged power connector. The Power LED will light when the Alcatel Office 224 switch is powered on. All ports will automatically negotiate the proper speed and duplex mode.

Reboot the Alcatel Office 224 switch if there is a problem. Contact your supplier for technical support.

After a power failure, it may be necessary to reconfigure any ports that were manually set. All other ports should automatically negotiate the proper speed and duplex mode.

The Alcatel Office 224 switch can be used with power sources in the range 100 to 240 VAC., 50 to 60 Hz.

Network Connections

This chapter covers the following:

- Cable Specifications
- Ports
- Connecting the Alcatel Office 224 switch to other devices

This section deals with making cables and connecting the Alcatel Office 224 switch to other devices. It is extremely important that cables have the correct pin arrangement and that the proper cables be used when connecting to servers, switches, hubs, workstations and other devices.

Cable Specifications

Use the following guidelines when handling cables:

Do not stretch or bend cables.

Do not put copper cables near sources of electromagnetic interference.

Do not create trip hazards by laying cables in aisles or walkways.

Secure cables to the floor when routing in aisles or walkways.

- Do not use telephone cable. Telephone cable does not support Ethernet or Fast Ethernet.

Copper Cable

In order for Ethernet or Fast Ethernet to work the wires must be arranged correctly inside the RJ-45 connector. The most common problem on Ethernet or Fast Ethernet networks is the cable. If you migrate from Ethernet to Fast Ethernet, make sure the cables are pinned out properly.

There are two types of cables: straight through and crossover. Category 3, 4, and 5 UTP/ STP cable has eight wires inside the sheath. The wires form four pairs. Straight through cable has the same pin out, inside the RJ-45 connector, at both ends. Crossover cable has a different pin arrangement at each end. Fast Ethernet does not tolerate incorrect pin arrangements. You must use the correct pin arrangement in order for the Alcatel Office 224 switch to work properly. . See Figure 8: Cable Diagram for an example of straight through and crossover cable.

The type of cable you use depends on the speed of your network. A network running at 10 Mbps can use lower grade cable than a network running at 100 Mbps. Table 1: Cable Specifications shows the cable requirements for Ethernet and Fast Ethernet networks.

Table 1: Cable Specifications:

Ethernet Type	Cable Requirements	Maximum Length
10BASE-T	Category 3, 4, 5 UTP or STP	100 m (328 feet)
100-TX	Category 5 UTP or STP	100 m (328 feet)

Figure 8: Cable Diagram

Ports

There are three types of ports on the Alcatel Office 224 switch: RS-232, MDI-II Uplink, and MDI-X.

RS-232 Port

The RS-232 port, located at the rear, is used to configure the Alcatel Office 224 switch.

Follow these steps to connect the Alcatel Office 224 switch and a workstation or laptop:

1. Plug one end of the cable provided into the port.
2. Plug the other end into the workstation or laptop.
3. Run HyperTerminal or a terminal emulation program using the settings given for Local Console Management at the beginning of Chapter 5, Managing the Alcatel Office 224 switch.

MDI-II Uplink Port

The MDI-II Uplink port allows you to use a straight through cable when connecting another switch to the Alcatel Office 224 switch. If the MDI-II Uplink port is in use, you must use a crossover cable when connecting another switch or other device that requires a crossover connection, to the Alcatel Office 224 switch.

Follow these steps to connect a device to the MDI-II Uplink port:

1. Plug one end of a cable into the uplink port.
2. Plug the other end into any port except an uplink port on the other device.

MDI-X Ports

The remaining ports are crossover ports. The pin arrangement is the same as the arrangement in a crossover cable. The advantage of MDI-X ports is that you can connect a device with an MDI-II port without using a crossover cable. The steps for connecting the Alcatel Office 224 switch to 10 Mbps devices or 100 Mbps devices are the same. All the ports will auto negotiate the proper speed and duplex mode.

Follow these steps to connect cables to the Alcatel Office 224 switch:

3. Plug one end of the cable into any of the MDI-X ports.
 4. Plug the other end into the appropriate port on the other device.
 5. Verify that the LED indicates connection at the proper speed and duplex mode.
-

LEDs

The LED panel of the Alcatel Office 224 switch, displayed in Figure 9, is designed to give you critical information at a glance.

The LEDs indicate the following:

Power

Link

Activity

Collision

Speed

All LEDs are described in detail. See Table 2: Per Port LEDs, to determine the meaning of each LED.

Power

The power LED lights when the Alcatel Office 224 switch is powered on. The purpose is to confirm that the Alcatel Office 224 switch is getting adequate power. The power LED is green when the Alcatel Office 224 switch is powered on and dark when it is powered off.

Link/ Act/ Collision

Solid green indicates the port is linked up. Dark (off) indicates there is no link at the port.

Flashing green indicates there is activity (transmitting or receiving) at the port.

Flashing yellow indicates collisions are occurring at the port.

100Mbps/ 10Mbps

The 100Mbps/10Mbps LED indicates the speed of the port. The LED is lit when the port is working at 100Mbps and dark when the port is working at 10Mbps.

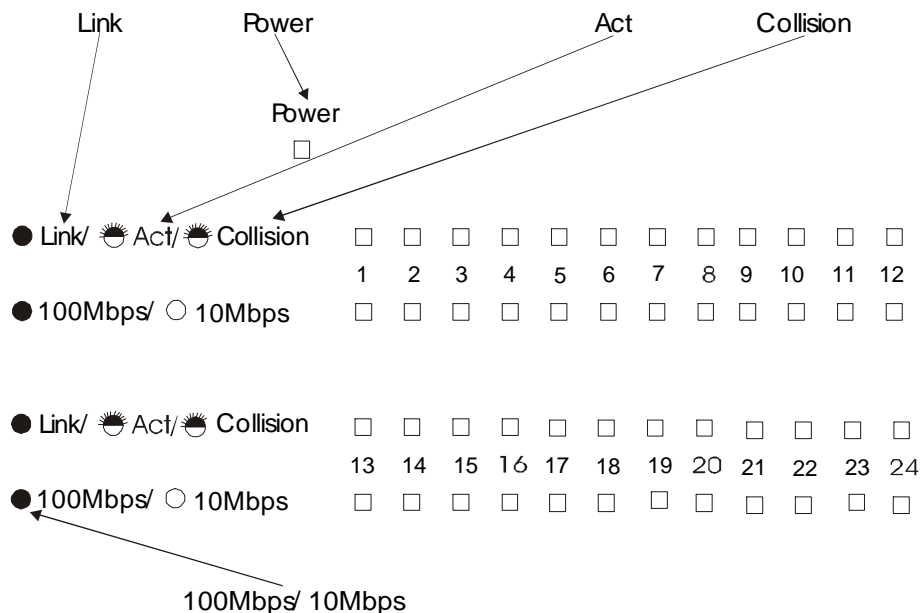


Figure 9: Alcatel Office 224 switch LED Panel

Table 2: Per Port LEDs

LED	Dark (Off)	Solid Green	Flashing Green	Flashing Yellow
Link/ Act/ Collision	No Link	Link Up but No Activity	Transmitting or Receiving	Collisions are occurring
100Mbps/ 10Mbps	Port is running at 10Mbps	Port is running at 100Mbps	Not applicable	Not applicable

Managing the Alcatel Office 224 switch

The Alcatel Office 224 switch is an unmanaged switch. You can change two values: the physical state of the ports and the flow control. You cannot make any other changes and configurations.

The only way to change the configuration is to connect a workstation or laptop to the Alcatel Office 224 switch with an RS-232 serial cable and make the desired changes. The Alcatel Office 224 switch 4 is not password protected. Anyone who connects to the Alcatel Office 224 switch 24 with an RS-232 cable can make changes.

Follow these steps to begin a management session:

1. Attach the male end of an RS-232 serial cable to the RS-232 serial port located at the rear.
2. Attach the other end to the serial port of a workstation or laptop.
3. Run a terminal or terminal emulation application using the following settings:
 - Emulation: VT-100/ANSI compatible
 - BPS: **19 200**
 - Data bits: **8**
 - Parity: **None**
 - Stop bits: **1**
 - Flow Control: **None**
 - Enable: **Terminal keys**
4. Power the Alcatel Office 224 switch on after the connection is established. Press Enter to refresh the screen and display the login panel. See Chapter 6 Troubleshooting if the panel does not display properly.

The connection times out after five minutes. Press Enter to reestablish the connection. This setting cannot be changed or disabled. If you have not done anything on the Alcatel Office 224 switch for more than five minutes, it will time out. Press Enter one time to refresh the screen.

Panel Conventions

The following panel conventions are used on the Alcatel Office 224 switch:

The Arrow and Tab keys can be used to select items.

The Spacebar is used to toggle to different settings.

The Backspace key allows you to move backwards through the panels.

Control-R refreshes the panel.

NEXT takes you forward to the next panel.

PREV takes you back to the previous panel.

SAVE saves your changes. If settings have been modified, changes take effect.

EXIT ends the management session.

Panels

Each panel of the Alcatel Office 224 switch 24 covers eight ports. You will have either two or three panels. There are no other menus or panels available.

Each panel has four columns: Port, Physical, Flow Control and Link Status.

Port

Port indicates the port number. The ports are numbered on the front panel of the Alcatel Office 224 switch. Remember that the MDI-II Uplink port and port one are connected. If you are using the uplink port, then port one is in use.

Physical

Physical refers to the physical state of the port. The ports have five states. You can change the physical state a port is in.

Auto is the default port state. Ports in the Auto state automatically negotiate speed and duplex mode. Half duplex means that data is being transmitted in one direction at a time. Full duplex means data is being transmitted and received simultaneously.

10/Half indicates the port is transmitting and receiving data at 10 Mbps in half duplex. 10/Full indicates the port is transmitting and receiving data at 10 Mbps in full duplex.

100/Half indicates the port is transmitting and receiving data at 100 Mbps in half duplex. 100/Full indicates the port is transmitting and receiving data at 100 Mbps in full duplex.

Flow Control

The Flow Control can be in one of two states: Enabled, the default state, or Disabled. Leaving flow control enabled allows the port to apply flow control as needed. In full duplex mode, IEEE 802.3x, port based flow control is implemented.

Flow control can only be enabled or disabled on ports in Auto mode. In forced mode Flow Control is automatically disabled.

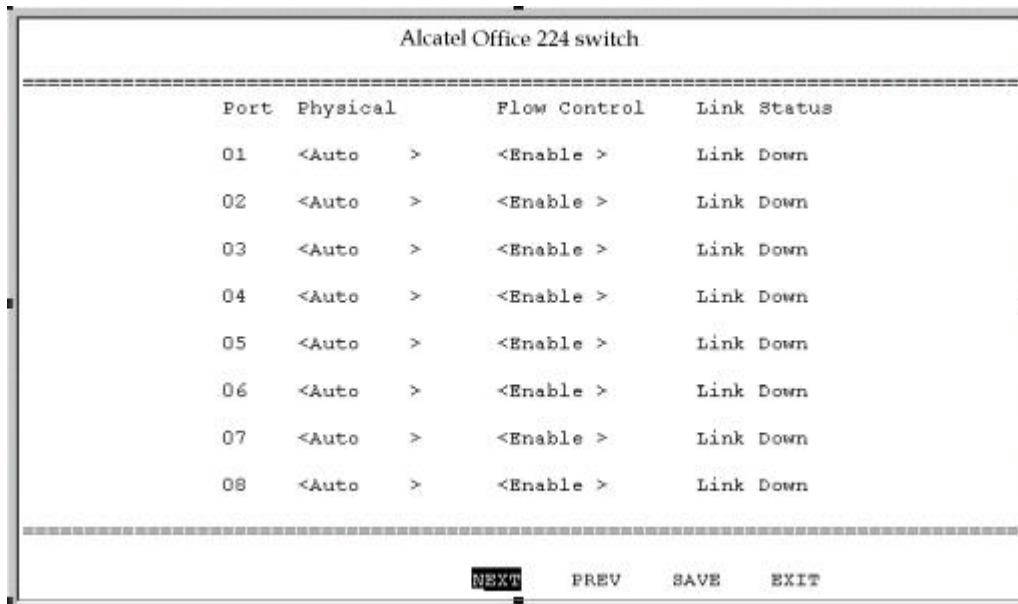
Link Status

The Link Status indicates whether the link to other devices is up or down. Link Down means there is no link to any other device. Ports that do not have devices connected to them will always show a Link Status of Link Down. Ports with devices connected will indicate the speed and duplex mode the port is running at.

Configuration Examples

The following figures give examples of possible configurations. The figures are examples. They are intended to illustrate the functions of the Alcatel Office 224 switch. The settings displayed on your switch may be different.

Remember that the Alcatel Office 224 switch is an unmanaged switch. The Alcatel Office 224 switch can be connected to the network with no configuration and it will automatically negotiate all speed and duplex settings. Changes should only be made for specific reasons.



Alcatel Office 224 switch

Port	Physical	Flow Control	Link Status
01	<Auto >	<Enable >	Link Down
02	<Auto >	<Enable >	Link Down
03	<Auto >	<Enable >	Link Down
04	<Auto >	<Enable >	Link Down
05	<Auto >	<Enable >	Link Down
06	<Auto >	<Enable >	Link Down
07	<Auto >	<Enable >	Link Down
08	<Auto >	<Enable >	Link Down

NEXT PREV SAVE EXIT

The first panel you see when logging in is displayed in Figure 10. The Link Status is Link Down because no network connections have been made.

Figure 10: No Network Connection

Ports 1 and 2 have been connected to the network. The Alcatel Office 224 switch has auto negotiated the proper speed and duplex mode, displayed in Figure 11. No further configuration is necessary.

Figure 11: Auto Negotiation



Alcatel Office 224 switch

Port	Physical	Flow Control	Link Status
01	<Auto >	<Enable >	100/Full
02	<Auto >	<Enable >	10/Half
03	<Auto >	<Enable >	Link Down
04	<Auto >	<Enable >	Link Down
05	<Auto >	<Enable >	Link Down
06	<Auto >	<Enable >	Link Down
07	<Auto >	<Enable >	Link Down
08	<Auto >	<Enable >	Link Down

NEXT PREV SAVE EXIT

The speed and duplex mode on port 1 has been manually set. Flow Control was automatically disabled when the Physical setting was changed from auto negotiation to forced mode, displayed in Figure 12. On port two, Flow Control has been manually set to Disabled by toggling the space bar.

Figure 12: Alcatel Office 224 switch Flow Control Disabled



The screenshot shows a terminal window titled "Alcatel Office 224 switch". It displays a table of port configurations. The table has four columns: Port, Physical, Flow Control, and Link Status. The data is as follows:

Port	Physical	Flow Control	Link Status
01	<100/Full>	<Disable>	100/Full
02	<Auto >	<Disable>	10/Half
03	<Auto >	<Enable >	Link Down
04	<Auto >	<Enable >	Link Down
05	<Auto >	<Enable >	Link Down
06	<Auto >	<Enable >	Link Down
07	<Auto >	<Enable >	Link Down
08	<Auto >	<Enable >	Link Down

At the bottom of the screen, there are four menu options: **NEXT**, PREV, SAVE, and EXIT. The **NEXT** option is highlighted with a black background.

Troubleshooting

This troubleshooting section is intended to help you solve the most common problems on the Alcatel Office 224 switch.

Problem	Solution
Cables	<p>Faulty cable is the most common source of problems on Ethernet and Fast Ethernet networks. Check the cable first if you are having any problems connecting to a device.</p> <p>Ethernet is more fault tolerant than Fast Ethernet. If you are moving from Ethernet to Fast Ethernet, make sure the cables are pinned out correctly. See Chapter 3, Network Connections, Cable Specifications, for a diagram showing the proper cable pin arrangement for Ethernet and Fast Ethernet.</p>
Port States	<p>All ports on the Alcatel Office 224 switch have two modes: auto negotiation mode and forced mode. Ports in auto negotiation mode auto negotiate the proper speed and duplex mode. Ports in forced mode have been manually set to a particular speed and duplex mode. Check the LEDs on the Alcatel Office 224 switch to verify settings.</p> <p>The port settings on the Alcatel Office 224 switch and the port settings on the device you are connecting to must be the same in order for them to communicate. Check the speed and duplex setting on both the port and the device you are connecting to.</p>
Power LED is Off	<p>Check the three pronged power plug and verify that you are getting power from the wall socket. If the Alcatel Office 224 switch is on and the power LED is not working properly, return the Alcatel Office 224 switch. If the Alcatel Office 224 switch is not powering on while the power cord is plugged into wall socket, the power supply is not working. Return the unit.</p>
All LEDs are Off	<p>Check the power plug and verify that the Alcatel Office 224 switch is receiving adequate power. Power the Alcatel Office 224 switch off and power it back on again. Return the unit if the problem persists.</p>
No Link	<p>If a cable is plugged into the port and the Link/ Act/ Collision LED is dark, check the cable and connection. The default value is that all ports auto negotiate the proper speed and duplex mode. If the port has been manually configured for a particular speed and duplex mode, verify that the speed and duplex mode of the port match the speed and duplex mode of the device you are connecting to.</p>

Appendix A

Alcatel Office 224 switch Technical Specifications

Switch Specifications

Complies with IEEE 802.3 CSMA/CD 10BASE-T Ethernet

Complies with IEEE 802.3u 100BASE-TX Fast Ethernet

NWAY Auto-negotiation for each 10/100-TX network port providing auto-detection of connected cable types, auto-sensing of full and half duplex signaling and auto-configuration

IEEE 802.3x compliant Full Duplex Flow Control

8K maximum entries for MAC address table

Comprehensive LED indicators display of the system/ port status

RS-232 (DB-9) port provided access for port (asynchronous, 8-bit data, 1 stop bit, no parity, 19.2 K baud)

Rack mountable (Fits standard 1.5 U EIA 19" rack)

24 10/100-TX ports

Port Specifications

RJ-45 ports for Cat 3, 4, and 5 UTP cable (Cat. 5 required for 10/100-TX)

10 or 100 Mbps data transfer rate

NWAY Auto-negotiation for all 10/100-TX ports

Full or Half Duplex for all 10/100-TX ports

General	
Standards:	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100-TX Fast Ethernet ANSI/IEEE Std 802.3 NWAY™ Auto Negotiation IEEE 802.3 Frame types: Transparent IEEE 802.3 MAC layer frame size: 64-1518
Protocol:	CSMA/CD, Full Duplex
Data Transfer Rate:	Fast Ethernet: 100 Mbps (half duplex) 200 Mbps (full duplex)
Topology:	Star
Network Cables:	<ul style="list-style-type: none"> 10BASE-T: 2-pair UTP Cat. 3 (100 m) 4-pair UTP Cat. 4, 5 (100 m) EIA/ TIA-568 150-ohm STP (100 m) 100-TX: 4-pair UTP Cat. 5 (100 m) EIA/ TIA-568B 150-ohm STP (100 m)
Number of Ports: (depending on model)	24 x 10/100 Mbps NWAY Ethernet

Physical and Environmental	
AC inputs:	100 – 240 VAC, 50/60 Hz (internal universal power supply)
Maximum Power Consumption:	33 watts
DC fans:	2 built in 40 x 40 mm fans
Operating Temperature:	0 ~ 50 degrees Celsius
Storage Temperature:	-25 ~ 70 degrees Celsius
Humidity:	5% ~ 95% non-condensing
Dimensions:	441 x 235 x 55 mm (1.25 U), 19 inch rack-mount width
Weight:	3 kg 6.6 lbs
EMI:	FCC Class A, CE Mark Class A, VCCI Class A, C-Tick Class A
Safety:	UL (UL 1950), CSA (CSA950), CE Mark (EN60950)

Performance	
Transmission Method:	Store-and-Forward
RAM Buffer:	1.5 M bytes per device
Filtering Address Table:	8 K entries per device
Packet Filtering/ Forwarding Rate:	148810 pps per port (for 100 Mbps)

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Guarantee conditions

Irrespective of the applicable statutory guarantees, this equipment is guaranteed for a period of two years, from the date of purchase (invoice date), in respect of all parts and repair charges. However, this guarantee shall not be applicable if the equipment has been used in any way contrary the instruction given in this manual, in case of damage due to causes outside the equipment itself, if the equipment installation is/was not compliant with applicable regulations, if the equipment has been modified in any way or if repair work has been carried out by persons not approved by the manufacturer or retailer.

Approval

FCC Warning

This equipment has been tested and found to comply with the regulations for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

CE Mark

The CE marking indicates that these products comply with the European Community directives in effect, and the following directives in particular:

- 89/336/CEE (electromagnetic compatibility)
- 73/23/CEE (low voltage)

WARNING: These are Class A products. In a domestic environment, these products may cause radio interference, in which case the user may be required to take adequate measures.

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